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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/827,046

04/05/2001

Joseph V. Bak

2941

3455

27377

7590

04/14/2004

MACMILLAN, SOBANSKI & TODD, LLC
ONE MARITIME PLAZA-FOURTH FLOOR
720 WATER STREET
TOLEDO, OH 43604

EXAMINER

JOHNSON, JONATHAN J

ART UNIT

PAPER NUMBER

1725

DATE MAILED: 04/14/2004

18

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/827,046

Applicant(s)

BAK ET AL.

Examiner

Jonathan Johnson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2-17-04; 12-5-03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Withdrawal of Allowable Subject Matter

The indicated allowability of claims 1-17 is withdrawn in view of the newly discovered reference(s) to Stewart (WO 01/70450). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Stewart (WO 01/70450). With respect to claim 1, Stewart teaches a method of making a tool for molding a part such that the tool has a channel formed therein to provide the flow of fluid for heating/cooling the molded part (Figure 5b, item 24), the method comprising providing a plurality of tool section in an unhardened state, each of a number of the tool sections having at least one of a groove in a surface thereof and a hole therethrough, assembling the tool sections with surfaces thereof in facing relationship to form a tool block wherein the grooves and holes form at least one channel in the tool block, wherein the channel is formed with at least one inlet and outlet at walls of the tool sections to provide the flow of fluid through the channel (page 15,

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second full paragraph), forming the tool sections so that they assume the shape of a tool when assembled, and diffusion bonding the facing surfaces (Page 34, third full paragraph).

With respect to Claim 2, the teachings of Stewart are the same as relied upon in the rejection of Claim 1. Stewart teaches wherein said facing surfaces of said tool sections have complementary grooves therein and said tool sections are assembled with said complementary grooves in facing relationship to form said channel (Figure 3, item 24).

With respect to Claim 3, the teachings of Stewart are the same as relied upon in the rejection of Claim 2. Stewart teaches each said groove has a predetermined cross-sectional configuration that provides said channel with a predetermined cross-sectional configuration after said diffusion bonding step (page 15, second full paragraph).

With respect to Claim 4, the teachings of Stewart are the same as relied upon in the rejection of Claim 2. Stewart teaches the tool includes at least three said tool sections, at least one of which has grooves in two opposing surfaces thereof (Figure 5b, item 24).

With respect to Claim 5, the teachings of Stewart are the same as relied upon in the rejection of Claim 4. Stewart teaches said facing surfaces of said tool sections are planar and opposing surfaces of each said tool section are substantially parallel (figure 4, item 22 and Figure 3, item 32).

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With respect to Claim 6, the teachings of Stewart are the same as relied upon in the rejection of Claim 2. Stewart teaches the tool includes at least one said groove in one said tool section in fluid communication with at least one said hole through an adjacent said tool section (page 15, second full paragraph).

With respect to Claim 7, the teachings of Stewart are the same as relied upon in the rejection of Claim 1. Stewart teaches the step of grinding and polishing said facing surfaces of said adjacent tool sections to a predetermined surface finish prior to said diffusion bonding step (pages 17 and 18).

With respect to Claim 8, the teachings of Stewart are the same as relied upon in the rejection of Claim 7. Stewart teaches the predetermined surface finish is controlled to provide a bond between said tool sections that includes imperfections (page 19, first full paragraph).

With respect to Claim 9, the teachings of Stewart are the same as relied upon in the rejection of Claim 8. Stewart teaches at least one of the composition of the ambient atmosphere, said pressure and temperature are controlled to provide a bond between said tool sections that includes imperfections for permitting nondestructive separation of said bonded tool sections (page 35, first full paragraph and page 36, first paragraph).

With respect to Claim 10, the teachings of Stewart are the same as relied upon in the rejection of Claim 1. Stewart teaches cooling said diffusion bonded tool sections under conditions that leave said material in an annealed state that permits machining thereof (page 37, first full paragraph).

With respect to Claim 11, the teachings of Stewart are the same as relied upon in the rejection of Claim 1. Stewart teaches forming said tool sections so that they assume the shape of a tool when assembled; and cooling or heating said diffusion bonded tool sections under conditions that leave said material in a hardened state (Figure 4, item 22 and page 34, first full paragraph).

With respect to claim 12, Stewart teaches cutting a body of tool material in an annealed state into layers with opposing surfaces (pages 17-19 and page 2); forming in each of a number of said layers at least one of a groove in a surface thereof and a hole therethrough (Figure 5b, item 24); assembling said layers in facing relationship so that said grooves and holes form at least one channel in said assembled layers (Figure 4, item 22) where the channel is formed with at least one inlet and outlet at outer walls of the tool sections to provide the flow of fluid through the channel (figure 4, item 24); and diffusion bonding facing surfaces of said adjacent layers by pressing said layers together at an elevated temperature (Page 34, third full paragraph). Stewart also teaches the water cutting process does not impart any residual stresses during cutting (page 19).

With respect to Claim 13, the teachings of Stewart are the same as relied upon in the rejection of Claim 12. Stewart teaches cooling said diffusion bonded layers under conditions that leave said material in an annealed state that permits machining thereof; machining said diffusion bonded layers to form a tool with a predetermined configuration relative to said channel; and heat treating said machined tool to cause it to assume a hardened state (page 37).

With respect to Claim 14, the teachings of Stewart are the same as relied upon in the rejection of Claim 12. Stewart teaches forming said layers so that they assume the shape of a tool when assembled (figure 5); and cooling said layers under conditions that leave said material in a hardened state (page 37).

With respect to Claim 15, the teachings of Stewart are the same as relied upon in the rejection of Claims 13 and 14. Stewart teaches the material is selected from the group comprising: Composition AISI Designation (weight %) HRC S7 chrome-moly shock C 0.5; Si 0.25; V 3.25; Mn 45-57 resistant steel 0.7; Mo 1.4 A2 air hardening C 1.0; V 0.25; Si 0.60; Mo 57-62 tool steel 1.1; Cr 5.25; Mn 0.6 M2 moly-tungsten C 0.83; Mo 5.0; W 6.35; Cr 60-65 high speed steel 4.15; V 1.9 W2 water hardening C 0.070 to 1.3 50-64 carbon tool steel 420 stainless steel C 0.3-0.4; Mn 1.0 max; P 48-52 0.03 max; S 0.03 max; Si 1.0 max; Cr 12.0-14.0 H-13 hot work steel C 0.4; Si 1.0; V 1.05; Cr 38-53 5.25; Mo 1.25; Mn 0.4 D2 high carbon/high C 1.55; Cr 12; Mo 0.08; V 54-61 chrome tool steel 0.09 D3 high carbon/high C 2.2; Cr 12; V 1.0 54-61 chrome tool steel and a beryllium/copper alloy that is heat treatable and has an HRC value of 38-42, and titanium and titanium alloys, and metals from which oxides are

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removed from said facing surfaces and said surfaces are degreased and cleaned, and wherein HRC is the Rockwell-C hardness of the material in a hardened state (page 2).

With respect to Claim 16, the teachings of Stewart are the same as relied upon in the rejection of Claims 12. Stewart teaches the facing surfaces include indexing means for fixedly locating said surfaces relative to each other and said grooves are located precisely relative to said indexing means (Figure 4, edges of item 22).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stewart (WO 01/70450) as applied to Claim 16 above and further in view of Weaver (5,031,483). Weaver teaches the indexing means comprises indexing holes formed in said block before cutting it into said layers; said layers are cut so that each layer includes at least two indexing holes in said opposing surfaces; and said layers are assembled by aligning said indexing holes and placing an indexing member therein (Figure 1, item 24). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the indexing system of Stewart to utilize

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indexing holes and placement of an indexing member therein in order to provide proper registration of the surfaces (see Weaver col. 5, ll. 1-25).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Johnson whose telephone number is 571-272-1177. The examiner can normally be reached on M-Th 7AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on 571-272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jj

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